UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,544	12/30/2003	Ariela Zeira	I-2-0472.1US	8569

24374 7590 03/07/2007	EXAMINER
VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103	TORRES, JUAN A

ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
	10/748,544	ZEIRA, ARIELA
Office Action Summary	Examiner	Art Unit
	Juan A. Torres	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-64* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date *See Continuation Sheet*.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/17/2004, 10/12/2004 and 05/22/2006.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 05/17/2004;

10/12/2004; and 05/22/2006 are in compliance with the provisions of 37 CFR 1.97.

Accordingly, the information disclosure statements are being considered by the

examiner.

Drawings

The drawings are objected to because:

a) The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they include the following reference character(s) not mentioned in the

description: "$\underline{r}_3$" to "$\underline{r}_9$" (see figure 2); and "$\underline{s}_{i2}$"; "$\underline{r}_{i2}$"; "$\underline{x}_{iK-1}$"; and "$\underline{d}_{iK}$" (see figure 3).

b) The recitations "x_{i1}" (i underlined); and "x_{iK-1}"(i underlined), seems to be

improper (see specification paragraph [0028]) it is suggested to be changed to "$\underline{x}_{i1}$"; and

"$\underline{x}_{iK-1}$" respectively.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in

reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next

Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: the recitation

"$r_1...r_s$" in paragraph [0023] is improper (see figure 3 output of block 24); it is suggested

to be changed to "$r_1...r_n$". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 7-9, 11, 13-15, 17, 19-21, 23, 25-27, 29, 31-33, 35, 37-39, 41, 43-

45, 47, 49-51, 53, 55-57, 59 and 61-64 are rejected under 35 U.S.C. 102(b) as being

anticipated by Misra ("A computationally efficient hybrid of joint detection and

successive interference cancellation", IEEE VTS 53rd Vehicular Technology

Conference, 2001. VTC 2001 Spring, Volume 3, 6-9 May 2001 Page(s): 1784 - 1788

vol.3) (using Misra (US 20020018454 A1) and Jung-Lin Pan ("Low complexity data

detection using fast Fourier transform decomposition of channel correlation matrix",

IEEE Global Telecommunications Conference, 2001, GLOBECOM '01, Volume 2, 25-29

Nov. 2001 Page(s): 1322 - 1326 vol.2) of inherency of despreding).

As per claim 1, Misra discloses receiving a plurality of user signals in a shared

spectrum (abstract and section 2 page 1785); producing samples of the received user

signals as a received vector (section 2 page 1785 received vector r); segmenting the

received vector into a plurality of segments (section 2 page 1785 second and third

paragraphs K bursts); for each segment, successively determining symbols for each

user by determining symbols for one user and removing a contribution of that one user

from the received vector (section 2 page 1786 value of d); and assembling the

determined symbols corresponding to each segment into a data vector (section 2 page

1786 value of vector d).

As per claim 7, Misra discloses receiving a plurality of signals in a shared

spectrum (abstract and section 2 page 1785); producing samples of the received

signals as a received vector (section 2 page 1785 received vector r); segmenting the

received vector into a plurality of segments (section 2 page 1785 second and third

paragraphs K bursts); grouping the received signals by received power level (abstract;

section 2 page 1786 step 2); for each segment, successively determining symbols for

each group by determining symbols for one group and removing a contribution of that

one group from the received vector (section 2 page 1787 steps 7 and 8); and

assembling the determined symbols corresponding to each segment into a data vector

(section 2 page 1787 steps 7 and 8).

As per claim 13, Misra discloses an antenna receiving a plurality of user signals in a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently discloses the antenna see US 20020018454 A1 figure 2); a sampling device producing samples of the received user signals as a received vector (section 2 page 1785 received vector r); a segmentation device segmenting the received vector into a plurality of segments (section 2 page 1785 second and third paragraphs K bursts); a equalization and successive interference canceller successively determining symbols for each user by determining symbols for one user and removing a contribution of that one user from the received vector (section 2 page 1786 MMSE value of d); and a segment reassembly device assembling the determined symbols corresponding to each segment into a data vector (section 2 page 1786 value of vector d).

As per claim 19, Misra discloses means for receiving a plurality of user signals in a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently discloses the antenna see US 20020018454 A1 figure 2); means for producing samples of the received user signals as a received vector (section 2 page 1785 received vector r); means for segmenting the received vector into a plurality of segments (section 2 page 1785 second and third paragraphs K bursts); means for successively determining symbols for each user by determining symbols for one user and removing a contribution of that one user from the received vector (section 2 page 1786 MMSE value of d); and means for assembling the determined symbols corresponding to each segment into a data vector (section 2 page 1786 value of vector d).

As per claim 25, Misra discloses an antenna receiving a plurality of user signals in a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently discloses the antenna see US 20020018454 A1 figure 2); a sampling device producing samples of the received signals as a received vector (section 2 page 1785 received vector r); a segmentation device segmenting the received vector into a plurality of segments (section 2 page 1785 second and third paragraphs K bursts); a equalization and successive interference canceller, for each group of received signals having a similar power level, successively determining symbols for each group by determining symbols for one group and removing a contribution of that one group from the received vector (section 2 page 1786 MMSE value of d; abstract; section 2 page 1786 step 2 section 2 page 1787 steps 7 and 8); and a segment reassembly device assembling the determined symbols corresponding to each segment into a data vector (section 2 page 1786 value of vector d).

As per claim 31, Misra discloses means for receiving a plurality of signals in a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently discloses the antenna see US 20020018454 A1 figure 2); means for producing samples of the received signals as a received vector (section 2 page 1785 received vector r); means for segmenting the received vector into a plurality of segments (section 2 page 1785 second and third paragraphs K bursts); means for successively determining symbols for each group of received signals having a similar power level by determining symbols for one group and removing a contribution of that one group from the received vector (section 2 page 1786 MMSE value of d; abstract; section 2 page 1786 step 2

section 2 page 1787 steps 7 and 8); and means for assembling the determined symbols

corresponding to each segment into a data vector (section 2 page 1786 value of vector

d).

As per claim 37, Misra discloses an antenna receiving a plurality of user signals

in a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently

discloses the antenna see US 20020018454 A1 figure 2); a sampling device producing

samples of the received user signals as a received vector (section 2 page 1785

received vector r); a segmentation device segmenting the received vector into a plurality

of segments (section 2 page 1785 second and third paragraphs K bursts); a

equalization and successive interference canceller successively determining symbols

for each user by determining symbols for one user and removing a contribution of that

one user from the received vector (section 2 page 1786 MMSE value of d); and a

segment reassembly device assembling the determined symbols corresponding to each

segment into a data vector (section 2 page 1786 value of vector d).

As per claim 43, Misra discloses means for receiving a plurality of user signals in

a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently

discloses the antenna see US 20020018454 A1 figure 2); means for producing samples

of the received user signals as a received vector (section 2 page 1785 received vector

r); means for segmenting the received vector into a plurality of segments (section 2

page 1785 second and third paragraphs K bursts); means for successively determining

symbols for each user by determining symbols for one user and removing a contribution

of that one user from the received vector (section 2 page 1786 MMSE value of d); and

means for assembling the determined symbols corresponding to each segment into a

data vector (section 2 page 1786 value of vector d).

As per claim 49, Misra discloses an antenna receiving a plurality of user signals

in a shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently

discloses the antenna see US 20020018454 A1 figure 2); a sampling device producing

samples of the received signals as a received vector (section 2 page 1785 received

vector r); a segmentation device segmenting the received vector into a plurality of

segments (section 2 page 1785 second and third paragraphs K bursts); a equalization

and successive interference canceller, for each group of received signals having a

similar power level, successively determining symbols for each group by determining

symbols for one group and removing a contribution of that one group from the received

vector (section 2 page 1786 MMSE value of d; abstract; section 2 page 1786 step 2

section 2 page 1787 steps 7 and 8); and a segment reassembly device assembling the

determined symbols corresponding to each segment into a data vector (section 2 page

1786 value of vector d).

As per claim 55, Misra discloses means for receiving a plurality of signals in a

shared spectrum (abstract WCDMA and section 2 page 1785. Misra inherently

discloses the antenna see US 20020018454 A1 figure 2); means for producing samples

of the received signals as a received vector (section 2 page 1785 received vector r);

means for segmenting the received vector into a plurality of segments (section 2 page

1785 second and third paragraphs K bursts); means for successively determining

symbols for each group of received signals having a similar power level by determining

symbols for one group and removing a contribution of that one group from the received vector (section 2 page 1786 MMSE value of d; abstract; section 2 page 1786 step 2 section 2 page 1787 steps 7 and 8); and means for assembling the determined symbols corresponding to each segment into a data vector (section 2 page 1786 value of vector d).

As per claim 61, Misra discloses a segmentation device segmenting a received vector of a plurality of user signals into a plurality of segments (section 2 page 1785 second and third paragraphs K bursts); an equalization and successive interference canceller successively determining symbols for each user by determining symbols for one user and removing a contribution of that one user from the received vector (section 2 page 1786 MMSE value of d); and a segment reassembly device assembling the determined symbols corresponding to each segment into a data vector (section 2 page 1786 value of vector d).

As per claim 63, Misra discloses a segmentation device segmenting a received vector of a plurality of signals into a plurality of segments (section 2 page 1785 second and third paragraphs K bursts); an equalization and successive interference canceller, for each group of received signals having a similar power level, successively determining symbols for each group by determining symbols for one group and removing a contribution of that one group from the received vector (section 2 page 1786 MMSE value of d; abstract; section 2 page 1786 step 2 section 2 page 1787 steps 7 and 8); and a segment reassembly device assembling the determined symbols

corresponding to each segment into a data vector (section 2 page 1786 value of vector d).

As per claims 2, 8, 14, 20, 26, 32, 38, 44, 50 and 56 Misra discloses claims 1, 7, 13, 19, 25, 31, 37, 43, 49 and 55, Misra also discloses that each segment has a portion overlapping with another segment (section 2 page 1785 second paragraph $N_c=(SFN_s +(W-1))$ so the burst superposed (W-1) with the previous and the next bursts).

As per claims 3, 9, 15, 21, 27, 33, 39, 45, 51 and 57, Misra discloses claims 2, 8, 14, 20, 26, 32, 38, 44, 50 and 56, Misra also discloses that the overlapping portion is at least two times (section 2 page 1785 second paragraph $N_c=(SFN_s +(W-1))$ so the burst superposed (W-1) with the previous and the next bursts).

As per claims 5, 11, 17, 23, 29, 35, 41, 47, 53, 59, 62, and 64, Misra discloses claims 1, 7, 16, 22, 28, 34, 40, 46, 51, 58, 61 and 63, Misra also discloses equalizing an input vector, despreading the equalized vector and making hard decisions on the despread equalized vector (section 2 page 1786 equations 4a and 4b MMSE, indicates in pages 1324 equation 9 that this equation can be obtained by simple despreding process, and page 1787 step 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 6, 10, 12, 16, 18, 22, 24, 28, 30, 34, 36, 40, 42, 46, 48, 52, 54, 58 and

60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misra as applied to

claims 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56 and 59

above, and further in view of Jung-Lin Pan ("Low complexity data detection using fast

Fourier transform decomposition of channel correlation matrix", IEEE Global

Telecommunications Conference, 2001, GLOBECOM '01, Volume 2, 25-29 Nov. 2001

Page(s): 1322 - 1326 vol.2).

As per claims 4, 10, 16, 22, 28, 34, 40, 46, 52 and 58, Misra discloses claims 2,

8, 14, 20, 26, 32, 38, 44, 50 and 56 Misra doesn't disclose storing each segment

determined symbols, after truncating determined symbols. Jung-Lin Pan discloses

storing each segment determined symbols, after truncating determined symbols

(section II page 1325 equation 22 and subsequent paragraph. The summation

inherently discloses the storing). Misra and Jung-Lin Pan are analogous art because

they are from the same field of endeavor of multiuser detection (MUD). At the time of

the invention, it would have been obvious to a person of ordinary skill in the art to

incorporate truncation and storing disclosed by Jung-Lin Pan in the reception technique

disclosed by Misra. The suggestion/motivation for doing so would have been to reduce

the complexity (Jung-Lin Pan abstract).

As per claims 6, 12, 18, 24, 30, 36, 42, 48, 54 and 60, Misra discloses claims 5,

11, 17, 23, 29, 35, 41, 47, 53 and 59 Misra doesn't disclose that the equalizing the input

vector uses fast Fourier transforms. Jung-Lin Pan discloses that the equalizing the input

vector uses fast Fourier transforms (abstract section I third paragraph page 1322 and

section II page 1325). Misra and Jung-Lin Pan are analogous art because they are from the same field of endeavor of multiuser detection (MUD). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate truncation and storing disclosed by Jung-Lin Pan in the reception technique disclosed by Misra. The suggestion/motivation for doing so would have been to reduce the complexity (Jung-Lin Pan abstract).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is 571-272-3119. The examiner can normally be reached on 8-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Juan Alberto Torres
02-27-2007

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PRIMARY EXAMINER